

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) An optical multiplex transmission method comprising:
transmitting an optical signal group across a plurality of nodes in network;
for each of said nodes in said network, accepting from a first optical
transmission line an a multiplexed optical signal group, said optical sign group having in
which a plurality of optical wavelength signals of a plurality of wavelengths are
multiplexed, from a first optical transmission line;
converting at least one of the optical wavelength signals of the first
wavelength included in the optical signal group, into the a wavelength-converted optical
wavelength signal having an arbitrary wavelength respectively of the second wavelength
different from said first wavelength; and
multiplexing said at least one said wavelength-converted of the optical
wavelength signal signals of the wavelengths except said first wavelength, with at least
one other of the optical wavelength signals included in said optical signal group wherein
said wavelength-converted optical wavelength signal is not multiplexed with the optical
wavelength signal from which said wavelength-converted optical wavelength signal was
originally converted [[,]] ; and

~~said optical signal of said second wavelength, and then~~ outputting the resulting multiplexed optical wavelength signals to a second transmission line.

2. (currently amended) An optical multiplex transmission method comprising:

transmitting optical signal groups across a plurality of nodes in network;
for each of said nodes, accepting from a first optical transmission line, a
first multiplexed optical signal group having in which optical signals of a plurality of
optical wavelength signals ~~wavelengths are multiplexed, from a first optical transmission~~
~~line,~~ and accepting from a second optical transmission line a second multiplexed optical
signal group having in which optical signals of a plurality of optical wavelength signals
~~wavelengths are multiplexed, from a second optical transmission line;~~

converting a first the optical wavelength signal of the first wavelength
included in the first optical signal group, into a second converted the optical wavelength
signal, whose wavelength is of the second wavelength different from that of said first
optical wavelength signal;

multiplexing at least one of the optical wavelength signals included in said
first optical signal group, at least one of the optical wavelength signals included in the
second optical signal group, and ~~said the second converted~~ optical wavelength signal ~~of~~
~~said second wavelength,~~ and then outputting the resulting multiplexed optical wavelength
signals to a third optical signal line; and

multiplexing at least one of the optical wavelength signals from said first
optical signal group aside from the except the optical signals to be outputted to the third

optical signal line, ~~included in said first optical signal group~~, and at least one of the optical signals from said second optical signal group aside from except said optical signals to be outputted to said third optical signal line, ~~included in said second optical signal group~~, and then outputting the resulting multiplexed optical wavelength signals to a fourth optical signal line.

3. (currently amended) An optical multiplex transmission method comprising:

transmitting an optical signal group across a plurality of nodes in network;

allowing wherein at any a first node apparatus in said network;

to receive receiving an a wavelength-multiplexed optical signal group in
which the plurality of optical wavelength signals are multiplexed;

to transmit transmitting at least one of the optical wavelength signals
included in the optical signal group, to a second node apparatus connected with the first node apparatus;

to convert converting at least one of the optical wavelength signals of first
wavelength included in said the optical signal group thus received, into the a wavelength-
converted optical wavelength signal having an arbitrary wavelength respectively of
second wavelength different from the first wavelength; and

multiplexing said at least one wavelength-converted optical wavelength
signal with at least one of the optical wavelength signals included in the optical signal
group received by the second node, wherein said wavelength-converted optical
wavelength signal is not multiplexed with the optical wavelength signal from which said

wavelength-converted optical wavelength signal was originally converted; and

~~to transmit said~~ transmitting the resulted multiplexed optical wavelength
~~signals of the second wavelength~~ to a third node apparatus connected with ~~said first the~~
second node apparatus.

4. (currently amended) A method wherein a node apparatus in a network of a
plurality of node apparatuses multiplexes optical wavelength signals and transmits the
resulting multiplexed optical wavelength signals, comprising:

at any one of said nodes transmitting optical signal groups across a
plurality of nodes in network;

receiving a first optical signal group from a first optical transmission line,
and a second optical signal group from a second optical transmission line;

optically multiplexing at least one of the optical wavelength signals
included in the first optical signal group, and at least one of optical wavelength signals
included in the second optical signal group, and then outputting the resulting multiplexed
optical wavelength signals to a third optical transmission line;

optically multiplexing at least one of the optical wavelength signals
included in each of the first and second optical signal groups, except the optical signals to
be outputted to the third optical transmission line, and then outputting the resulting
multiplexed optical wavelength signals to a fourth optical transmission line; and

converting ~~the~~ an optical wavelength signal included in the ~~of first~~
~~wavelength included in said first optical signal group, into the~~ a second converted optical
wavelength signal whose ~~of second~~ wavelength is different from that of the first optical

wavelength signal, and then transmitting ~~said~~ the second converted optical wavelength signal of ~~the second wavelength~~ to another node apparatus.

5. (currently amended) An optical transmission apparatus comprising:
- a plurality of communication nodes in a network, each of said nodes
having:
- an input wavelength demultiplexing unit which demultiplexes a first multiplexed optical signal group having a plurality of ~~including~~ optical wavelength signals of ~~a plurality of wavelengths inputted from a first optical fiber~~, into the optical wavelength signals of the respective wavelengths;
 - a wavelength multiplexing unit which multiplexes a plurality of optical wavelength signals of ~~a plurality of wavelengths~~, and which outputs the resulting multiplexed optical wavelength signals ~~to a second optical fiber~~;
 - a specific wavelength dropping unit which externally outputs predetermined optical signals among ~~said~~ the optical wavelength signals of ~~said~~ ~~respective wavelengths~~ demultiplexed by ~~said~~ the input wavelength demultiplexing unit;
 - a specific wavelength adding unit which outputs optical wavelength signals of having predetermined wavelengths in a second optical signal group including a plurality of optical wavelength signals of ~~a plurality of wavelengths~~ externally inputted, to ~~said~~ the wavelength multiplexing unit; and
 - a wavelength converting unit which converts ~~the~~ at least one optical wavelength signal of ~~first wavelength~~ among ~~said~~ the optical wavelength signals of ~~said~~ ~~respective wavelengths~~ demultiplexed by ~~said~~ the input wavelength demultiplexing unit,

into ~~the~~ a wavelength-converted optical wavelength signal having an arbitrary wavelength respectively of second wavelength different from the first wavelength, and which outputs the wavelength-converted said optical wavelength signal of the second wavelength to ~~said~~ the specific wavelength adding unit.

6. (currently amended) An optical transmission apparatus comprising:
a plurality of communication nodes in a network, each of said nodes
having:
- means for deriving which derives at least one optical wavelength signal from within an optical signal group including optical wavelength signals ~~of a plurality of wavelengths inputted from a first optical fiber~~, and ~~for outputting which outputs~~ the derived optical wavelength signal outside ~~said~~ the optical transmission apparatus;
 - means for converting the wavelength of which converts at least one of the optical wavelength signals included in the optical signal group into a wavelength converted optical wavelength signal having an arbitrary wavelength respectively; and
 - means for outputting said at least one of the wavelength-converted optical wavelength signals of the converted wavelength, and ~~at least one of the optical signals~~ which are included in ~~said~~ the optical signal group and whose wavelengths are not converted, ~~to a second optical fiber~~.

7. (currently amended) An optical transmission apparatus according to Claim 5 3, wherein ~~said~~ the wavelength converting unit comprises:
an optoelectric conversion portion which converts said the optical wavelength

signal into an electrical signal;

a switching portion which selects a connection route for the electric signal; and

an electrooptic conversion portion ~~which converts said electric signal into an optical signal of specific wavelength.~~

8. (currently amended) An optical transmission apparatus according to Claim ~~5~~ 3, wherein ~~said~~ the wavelength converting unit includes:

a switching portion which selects a connection route for said optical wavelength signal; and

a specific wavelength conversion portion which converts the wavelength of said optical wavelength signal into a specific wavelength.

9. (currently amended) An optical network comprising:

a plurality of node apparatuses each of which includes the optical multiplexing apparatus as defined in Claim ~~3~~ 5,

wherein ~~said~~ the plurality of node apparatuses are connected in a scheme selected from the group consisting of one liner, a ring shape and a mesh shape.

10. (currently amended) An optical network according to Claim ~~9~~ 7, further comprising:

means for ~~accepting a~~ determining wavelength conversion methods in the node apparatuses relevant to an accepted channel connection request for connecting the first and second node apparatuses, ~~and then determining wavelength conversion methods in~~

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~~said node apparatuses relevant to the connection; and~~

means for giving commands of the determined conversion methods to the
respective node apparatuses.